May 27, 1941. L. C. COLLINGE ET AL 2,243,454

DISPENSER FOR DISINFECTANTS

Filed Dec. 30, 1939

FIG. 1.

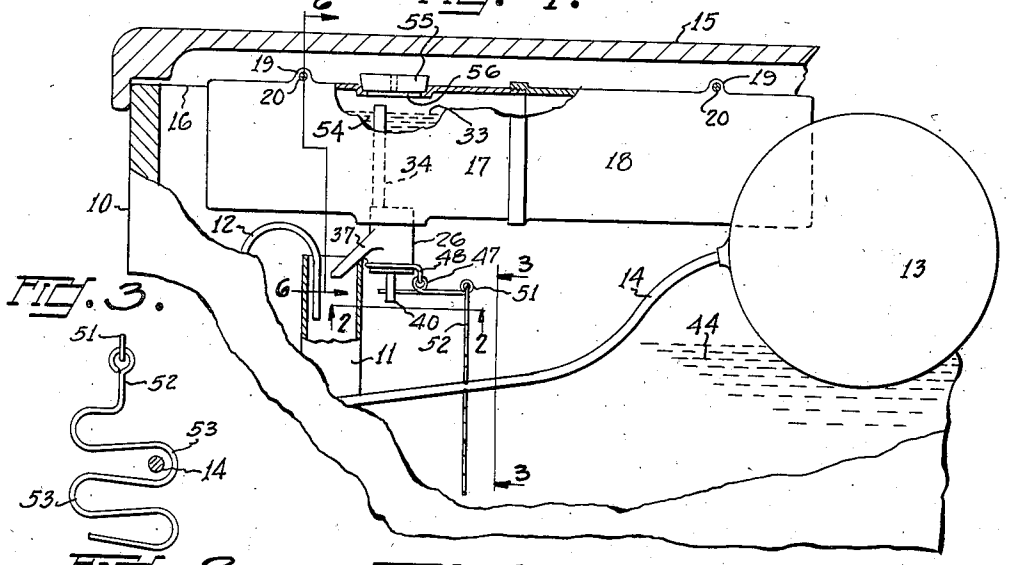


FIG. 3.

FIG. 2.

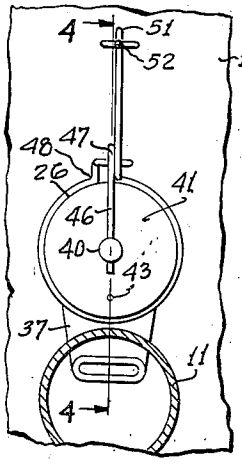


FIG. 5.

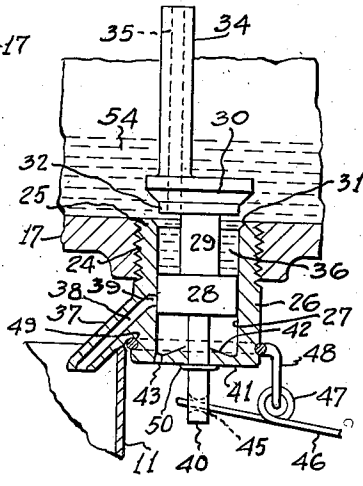


FIG. 4.

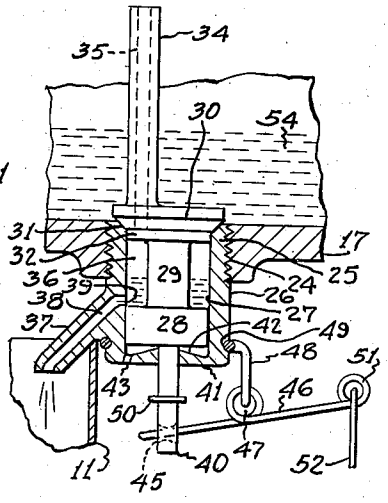
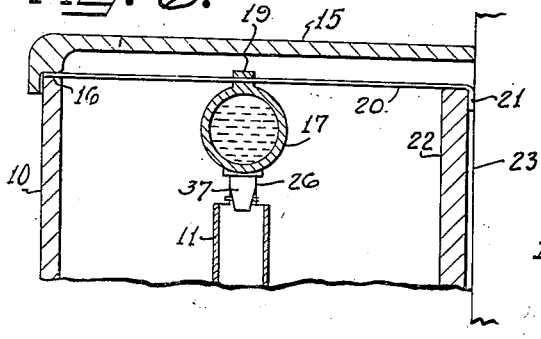


FIG. 6.



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DISPENSER FOR DISINFECTANTS

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5 Claims. (Cl. 4—227)

This invention relates generally to sanitary devices, and particularly to a dispenser for disinfectants.

The main object of this invention is to construct a dispenser of the class described whereby a measured quantity of sanitary, cleansing or deodorizing liquid will be automatically deposited in the trap of a toilet bowl during each flushing operation.

The second object is to construct a device of the class described especially adapted for use with toilets having water reservoirs disposed above same.

The third object is to construct a device of the class described which will be easy to install and which will require no alteration in the common form of existing equipment.

The fourth object is to construct a device of the class described wherein the float action of the toilet will actuate the device thereby protecting it against an abnormal operation of the flushing lever.

The fifth object is to construct the device in a manner that valve leakage will be practically eliminated, but that should same occur that leakage will not contact the metal working parts of the flushing mechanism without being diluted with water.

These and other objects are accomplished in the manner set forth in the following specification as illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary vertical section through the reservoir of a toilet employing the "low box" type of reservoir showing a portion of the overflow pipe in section and also a portion of the liquid container in section.

Fig. 2 is a fragmentary horizontal section taken along the line 2—2 in Fig. 1.

Fig. 3 is a vertical section taken along the line 3—3 in Fig. 1.

Fig. 4 is a vertical section through the metering device taken along the line 4—4 in Fig. 2, showing the disinfectant or other liquid passing from the metering device into the overflow pipe of the toilet in which the float of the toilet is in its uppermost position.

Fig. 5 is similar to Fig. 4, but showing a condition in which the reservoir has been emptied and the float is in a lowermost position during which time the metering chamber is filling with liquid.

Fig. 6 is a fragmentary section taken along the line 6—6 in Fig. 1.

Similar numerals refer to similar parts throughout the several views.

Referring in detail to the drawing, there is shown a toilet tank 10 with the usual overflow pipe 11, the trap priming pipe 12, the float 13 and the float arm 14. The usual cover 15 for the tank 10 is shown resting above the upper edge 16 of the tank 10.

Referring now to my device, same will be seen to consist of a horizontal container 17 having an elongated cap 18 which forms a part of the container and is threaded thereon for manufacturing and assembling reasons. The container 17 and cap 18 are provided with perforated ears 19 on the top side thereof through which extend the horizontal wires 20 which rest on the top edge 16 of the tank 10.

It is desirable to turn down the ends 21 of the wires 20 and insert same between the rear wall 22 of the tank 10 and the wall 23 of the room in which the tank 10 is located.

In the bottom of the container 17 is formed a threaded opening 24 into which is screwed the threaded end 25 of the metering valve body 26 within whose cylindrical opening 27 is slidably disposed a piston 28 which is mounted on the stem 29 on whose upper end is disposed the valve disk 30 which is adapted to contact the beveled seat 31 formed at the upper end of the opening 27. A cylindrical extension 32 of the valve disk 30 is of substantially the same diameter as is the piston 28 and is adapted to enter the opening 27 when the valve 30 is seated as shown in Fig. 4.

Extending upwardly from the top side of the disk 30 to a point above the highest liquid level 33 in the container 17 is a riser pipe 34 having an air opening 35 therein which is open at its upper and lower ends and communicates with the space 36 when the parts are in the position shown in Fig. 4.

On the side of the body 26 is disposed the discharge spout 37 whose opening 38 communicates with the space 36 through a port 39 which is above the piston 28 in its lowermost position.

Extending downwardly from the piston 28 is a stem 40 which is slidable within the bottom 41 of the body 26. The top side 42 of the bottom 41 slopes outwardly to drain any possible leakage away from the stem 40 and permit it to escape through the drain hole 43 from whence it falls into the water 44 within the tank 10. The stem 40 is provided with an opening 45 through which extends the rocker arm 46 whose eye 47 is pivoted on the wire bracket 48 which is

clamped in the groove 49 formed around the lower end of the body 26.

A stop 50 is formed on the stem 40 and limits the upward movement of the piston 28. The rocker arm 46 is provided with an eye 51 on the end opposite the stem 40 to which is attached a wire 52 which is provided with a plurality of reverse bends 53 between which may be inserted the float arm 14. That is to say, when installing the device the particular bend 53 which registers with the float arm 14 will be used in a given installation.

The operation of the device is as follows:

It is assumed that a quantity of disinfectant or other solution 54 is placed within the container 17, the float 13 being in its upper position as shown in Fig. 4 and the valve disk 30 is engaging the seat 31. It follows that no liquid 54 can flow through the space 36 and out of the spout 37 into the overflow pipe 11. However, if the toilet is flushed and the float 13 descends, the wire 52 is drawn downwardly and the stem 46 is pushed upwardly unseating the valve disk 30 and permitting the space 36 to fill with liquid 54. During this time, the port 39 has been closed by the piston 28 and will remain closed until the float 13 again rises due to the filling of the tank 10 which causes the parts to turn to the position shown in Fig. 4, permitting the liquid 54 which was confined within the space to flow into the trap of the toilet. It is possible for the liquid 54 to escape from the space 36 due to fact that air can pass downwardly through the opening 35 into the space 36.

It is desirable to provide a vented closure 55 for the filler opening 56 in the top side of the container 17.

It can be seen from the foregoing that by this construction a very simple form of apparatus is made available and the installation thereof can be made without the use of any tools and that the device is entirely automatic in its operation and it cannot be rendered inoperative by any careless operation of the toilet float mechanism.

It must be understood that only plastic, hard rubber, glass or some of the more expensive metals can be used in the production of this device and of these plastic is by far superior owing to the cheapness of manufacture and that it is unaffected by the action of chemicals.

While we have thus illustrated and described our invention, it is not our intention to cover such devices broadly, but we do intend to cover all such forms and modifications thereof as fall fairly within the appended claims.

We claim:

1. In a device of the class described the combination of a water supply tank having an upright overflow pipe therein, together with a container for chemicals in fluid form, said container having an outlet in the bottom thereof discharging into said overflow pipe, a metering valve for controlling the flow of liquid from said container to said overflow pipe and means for actuating said valve from the float mechanism of the toilet tank.

2. A device of the class described consisting of a horizontal container for sanitary fluids, said container having a filler opening in the top thereof and an outlet opening in the bottom thereof, a metering valve for controlling the outlet of said opening consisting of a valve body having a metering chamber therein communicating with the interior of said container, said metering chamber having a side outlet opening through which liquids from said container may be released into the overflow pipe of a toilet tank, a piston mounted in said metering chamber, a valve disk attached to said piston and adapted to close the inlet to said metering chamber when said piston is in its lowermost position at which time the outlet of said metering chamber is uncovered by said piston and means for actuating said piston from the float of the supply tank.

3. A metering valve for an apparatus of the class described consisting of a valve body and an upright cylindrical opening formed therein and having an outlet opening extending from one side thereof into the overflow pipe of a toilet tank, a piston within said cylindrical opening having a valve disk attached thereto and spaced therefrom in a manner that said valve disk may seat upon the upper end of said body while said piston is disposed below the outlet opening and means for actuating said piston and valve disk from the float arm of a toilet.

4. The apparatus described in claim 3, characterized by having the lower end of said valve body closed and having the upper side of said closed end sloping outwardly and having a drain opening near the outer portion of said closed end, said piston having a stem extending through the high point of said closed end to the actuating mechanism.

5. In a device of the class described, the combination of a plastic cylindrical shell having a filler opening in the top thereof and having a plastic valve body disposed in the lower portion thereof, said valve body having a cylindrical opening therein communicating with the interior of said cylindrical opening through which liquid from said container may pass into an overflow pipe, a valve disk forming a closure at the upper end of said cylindrical opening having a riser pipe projecting upwardly therefrom above the uppermost liquid level of the container, a piston within said cylindrical opening attached to said valve disk and spaced therefrom, a stem extending downwardly from said piston and a rocker lever pivotally mounted on said body having one end thereof attached to said stem and means for rocking said lever attached to the float arm of the toilet.

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